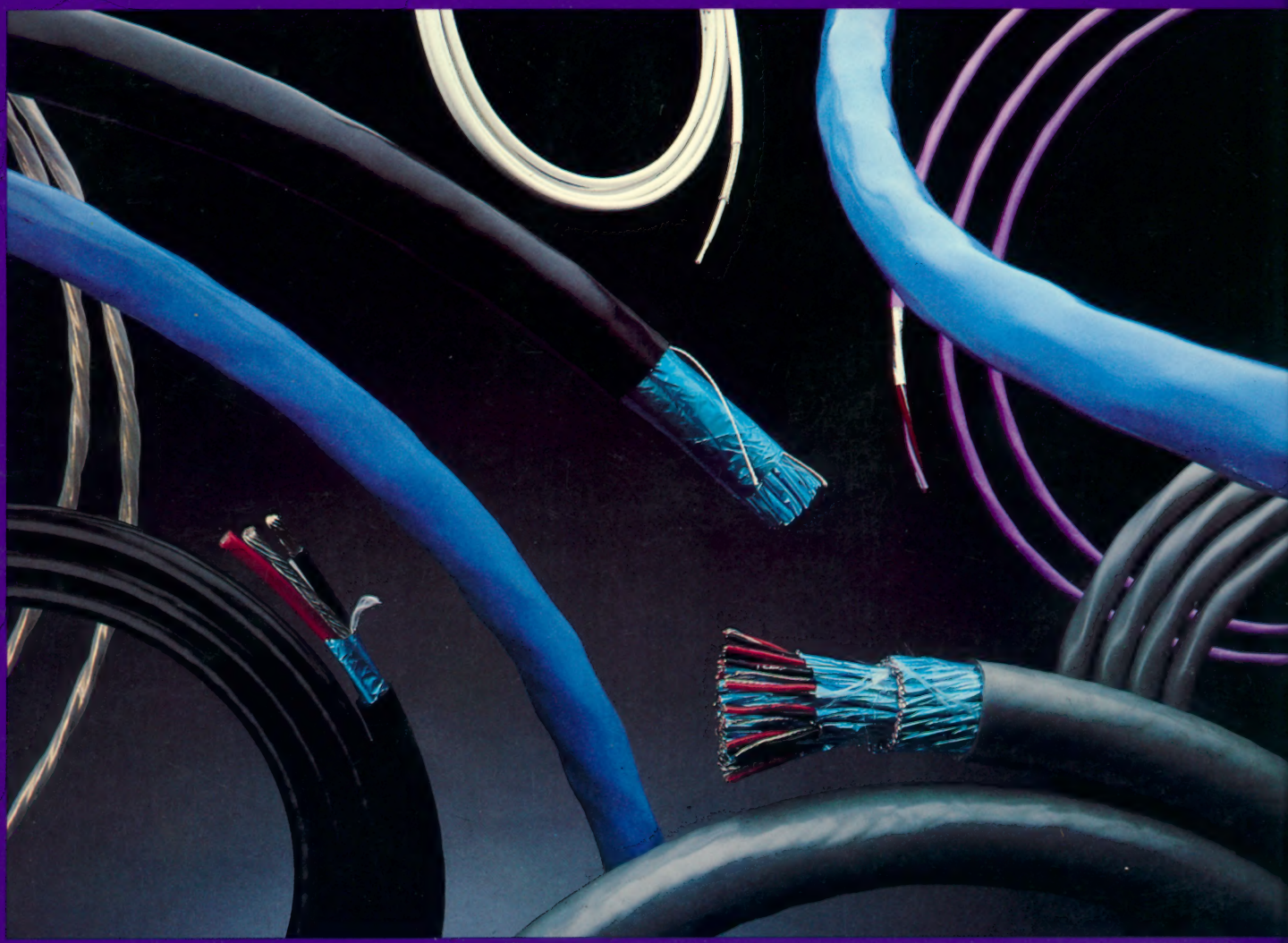
Instrumentation Cable

Belden
Electronic Wire and Cable



BELDEN

COOPER INDUSTRIES

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INSTRUMENTATION CABLE
Single Pair or Triad Non-Shielded
300 Volt 105°C Power Limited Tray Cable

Ⓤ LISTED

Catalog Number	Size AWG	No. of Conductors	Overall Diameter Inches
1035A	16	2	.260
1034A	16	3	.275

Dimensions shown are subject to standard industry tolerances.

CONSTRUCTION SPECIFICATIONS		
Conductor:	7 strand concentric bare copper, Class B	7 strand concentric bare copper, Class B
Primary Insulation:	17 mils nominal, 105°C FR PVC	17 mils nominal, 105°C FR PVC
Number of conductors per group:	2	3
Color Code:	Black and white	Black, white and red
Lay of Twist:	2"	2"
Separator:	1.5 mil Mylar tape	1.5 mil Mylar tape
Jacket:	35 mils nominal black 105°C FR PVC	35 mils nominal black 105°C FR PVC

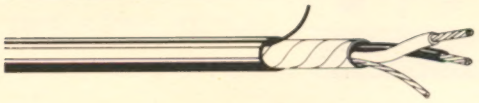
PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 13	105°C	105°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 13	1500 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 13	100%	100%
Deformation (T_2/T_1 Max.)	UL Subject 13	50%	50%
Air Oven Aging (168 Hrs. @ 136°C)	UL Subject 13		
% Retained Tensile		70%	
% Retained Elongation		65%	
(168 Hrs. @ 121°C)			
% Retained Tensile			70%
% Retained Elongation			45% (die cut)
Cold Bend (@ −20°C) 72 Hours	UL Subject 13	No Cracks	No Cracks
Flammability	UL Subject 13		
Horizontal		Pass	
Vertical & 70,000 BTU			Pass
Conductor Corrosion (168 Hrs. @ 136°C)	UL Subject 13	None	
Heat Shock			
(168 Hrs. @ 136°C)		No Cracks	
(168 Hrs. @ 121°C)			No Cracks
Shrinkage Test (6 Hrs. @ 121°C ⅛" Max.)	UL Subject 13	⅛" Or Less	

ELECTRICAL SPECIFICATIONS			
Dielectric	UL Subject 13		900V AC
Spark Test	UL Subject 13	2000V AC	
Continuity		100%	100%
Insulation Resistance (Min.)	UL Subject 13	100 Megohms 1,000'	

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE
Single Pair or Triad Shielded
300 Volt 105°C Power Limited Tray Cable



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Catalog Number	Size AWG	No. of Conductors	Overall Diameter Inches
1033A	20	2	.230
1032A	18	2	.250
1036A	18	3	.260
1030A	16	2	.265
1031A	16	3	.280

Dimensions shown are subject to standard industry tolerances.

CONSTRUCTION SPECIFICATIONS		
Conductor:	7 strand concentric bare copper, Class B	7 strand concentric bare copper, Class B
Primary Insulation:	17 mils nominal, 105°C FR PVC	17 mils nominal, 105°C FR PVC
Number of conductors per group:	2	3
Color Code:	Black and white	Black, white and red
Lay of Twist:	2"	2"
Shield:	100% coverage .35 x .5 mil aluminum-Mylar® tape shield and an 18-22 AWG 7 strand tinned copper drain wire	100% coverage .35 x .5 mil aluminum-Mylar® tape shield and an 18-22 AWG 7 strand tinned copper drain wire
Jacket:	35 mils nominal black 105°C FR PVC	35 mils nominal black 105°C FR PVC

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 13	105°C	105°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 13	1500 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 13	100%	100%
Deformation (T_2 / T_1 Max.)	UL Subject 13	50%	50%
Air Oven Aging (168 Hrs. @ 136°C)	UL Subject 13		
% Retained Tensile		70%	
% Retained Elongation		65%	
(168 Hrs. @ 121°C)			
% Retained Tensile			70%
% Retained Elongation			45% (die cut)
Cold Bend (@ −20°C) 72 Hours	UL Subject 13	No Cracks	No Cracks
Flammability	UL Subject 13		
Horizontal		Pass	
Vertical & 70,000 BTU			Pass
Conductor Corrosion (168 Hrs. @ 136°C)	UL Subject 13	None	
Heat Shock			
(168 Hrs. @ 136°C)		No Cracks	
(168 Hrs. @ 121°C)			No Cracks
Shrinkage Test (6 Hrs. @ 121°C ⅛" Max.)	UL Subject 13	⅛" Or Less	

ELECTRICAL SPECIFICATIONS			
Dielectric	UL Subject 13		900V AC
Spark Test	UL Subject 13	2000V AC	
Continuity		100%	100%
Insulation Resistance (Min.)	UL Subject 13	100 Megohms 1,000'	

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

BELDEN

INSTRUMENTATION CABLE

Single Pair or Triad Shielded
300 Volt 105°C Power Limited Tray Cable

Applications

Overall shielded instrumentation cables are for use in instrumentation, computer, and control applications where signals are transmitted in excess of 100 millivolts, except in areas where exceptional high voltage or current interferes. They are suitable for installation in wet or dry locations and conductor temperatures up to 105° centigrade. They may be installed in cable tray, rigid metal conduit, intermediate metallic conduit, electrical metallic tubing (EMT), or other raceways as approved by the appropriate authority.

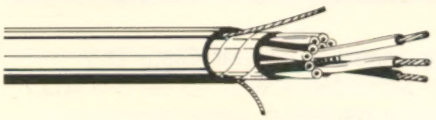
Construction

Conductors are soft annealed copper, Class B, 7 strand concentric in accordance with ASTM B-3 and B-8. Polyvinyl Chloride insulation, flame-retardant in accordance with UL 13, 0.017″ nominal thickness, 105°C temperature rating. Pairs or triads are twisted. Pairs are color coded black and white. Triads are color coded black, white, and red. Aluminum foil/Mylar® shield, 0.85 mils wrapped helically with a 10% minimum overlap to provide 100% coverage. 22-18 AWG, 7 strand tinned copper drain wire. Rip cord is applied longitudinally under the jacket to facilitate stripping. Jacket is black, flame-retardant 0.035″ polyvinyl chloride in accordance with UL 13, 105°C temperature rating, UL listed as type PLTC for use in accordance with NEC Article 725.

Cable passes the UL 70,000 BTU flame test which is comparable to the IEEE-383 flame test.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE
Multiple Pairs Overall Shield Only
300 Volt 105°C Power Limited Tray Cable



Catalog Number	Size AWG	No. of Pairs	Jacket Wall In.	Overall Diameter Inches
1056A	20	4	0.055	0.420
1057A	20	8	0.055	0.500
1058A	20	12	0.055	0.590
1059A	20	16	0.066	0.670
1060A	20	24	0.066	0.820
1061A	20	36	0.078	0.960
1062A	20	50	0.078	1.120

Ⓤ LISTED

Dimensions shown are subject to standard industry tolerances.

CONSTRUCTION SPECIFICATIONS	
Conductor:	20 gauge 7 strand concentric bare copper, Class B
Primary Insulation:	15 mils nominal, 105°C FR PVC
Number of conductors	2
Color Code:	Black and white
Group Identification:	Each pair numbered
Lay of Twist:	1½" to 2½" staggered
Cable Shield:	100% coverage, 2.35 mil aluminum-Mylar® tape shield and a 20 gauge 7 strand tinned copper drain wire
Jacket:	Black 105°C FR PVC
Communications Wire:	22 gauge 7 strand copper with 15 mils of orange PVC insulation

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

BELDEN

INSTRUMENTATION CABLE
Multiple Pairs Overall Shield Only
300 Volt 105°C Power Limited Tray Cable

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 13	105°C	105°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 13	1500 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 13	100%	100%
Deformation (T_2 / T_1 Max.)	UL Subject 13	50%	50%
Air Oven Aging (168 Hrs. @ 136°C)	UL Subject 13		
% Retained Tensile		70%	
% Retained Elongation		65%	
(168 Hrs. @ 121°C)			
% Retained Tensile			70%
% Retained Elongation			45% (die cut)
Cold Bend (@ −20°C) 72 Hours	UL Subject 13	No Cracks	No Cracks
Flammability	UL Subject 13		
Horizontal		Pass	
Vertical & 70,000 BTU			Pass
Conductor Corrosion (168 Hrs. @ 136°C)	UL Subject 13	None	
Heat Shock			
(168 Hrs. @ 136°C)		No Cracks	
(168 Hrs. @ 121°C)			No Cracks
Shrinkage Test (6 Hrs. @ 121°C 1/8" Max.)	UL Subject 13	1/8" Or Less	
ELECTRICAL SPECIFICATIONS			
Dielectric	UL Subject 13		900V AC
Spark Test	UL Subject 13	2000V AC	
Continuity		100%	100%
Insulation Resistance (Min.)	UL Subject 13	100 Megohms 1,000′	

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

Applications

Overall shielded instrumentation cables are for use in instrumentation, computer, and control applications where signals are transmitted in excess of 100 millivolts, except in areas where exceptional high voltage or current interferes. They are suitable for installation in wet or dry locations and conductor temperatures up to 105° centigrade. They may be installed in cable tray, rigid metal conduit, intermediate metallic conduit, electrical metallic tubing (EMT), or other raceways as approved by the appropriate authority.

Construction

Conductors are bare soft annealed copper, Class B, 7 strand concentric in accordance with ASTM B-3 and B-8. Polyvinyl chloride insulation, flame-retardant in accordance with UL 13, 105°C temperature rating. Pairs are twisted 20 AWG insulated conductors have a 1½" to 2½" staggered lay. Pairs are color coded black and white. The white conductor in each pair is sequentially numbered for identification. Communication wire is a 22 AWG, Class B stranded, annealed, uncoated copper covered with a 0.015" orange 105°C polyvinyl chloride. Aluminum-foil/Mylar® cable shield, 1.5 mils on single pair, 2.35 mils on multiple pairs, wrapped helically with a 10% minimum overlap to provide 100% coverage, foil facing outward. Tinned stranded copper drain wire 20 AWG. Rip cord is applied longitudinally under the jacket to facilitate stripping. Jacket is black, flame-retardant polyvinyl chloride in accordance with UL 13, 105°C temperature rating. UL listed as type PLTC for use in accordance with NEC Article 725.

Cable passes the UL 70,000 BTU flame test which is comparable to the IEEE-383 flame test.

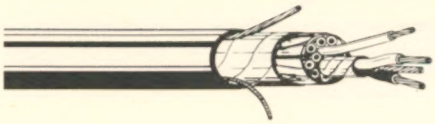
Product Features

Instrumentation cables are flame-retardant (will not propagate flame), oil resistant, sunlight resistant, have superior weathering characteristics, are easy to splice or terminate, twisted to reduce electromagnetics, and pairs are color coded for easy hook-up.

BELDEN

INSTRUMENTATION CABLE

Multiple Shielded Pairs or Triads and Overall Shield
300 Volt 105°C Power Limited Tray Cable



Catalog Number	Size AWG	No. of Pairs	No. of Triads	Jacket Thickn. Inches	Overall Diameter Inches
1075A	20	2		.055	.370
1076A	20	4		.055	.425
1077A	20	8		.055	.540
1078A	20	12		.066	.670
1079A	20	16		.066	.740
1091A	20	20		.066	.810
1080A	20	24		.078	.910
1081A	20	36		.078	1.060
1082A	20	50		.078	1.240
1083A	20		4	.055	.490
1084A	20		8	.055	.620
1085A	20		12	.066	.770
1092A	20		16	.066	.850
1086A	20		24	.078	1.070

Ⓤ LISTED

Dimensions shown are subject to standard industry tolerances.

CONSTRUCTION SPECIFICATIONS		
Conductor:	20 gauge 7 strand concentric bare copper, Class B	20 gauge 7 strand concentric bare copper, Class B
Primary Insulation:	15 mils nominal, 105°C FR PVC	15 mils nominal, 105°C FR PVC
Number of conductors:	2	3
Color Code:	Black and white	Black, white and red
Group Identification:	Each pair numbered	Each triple numbered
Lay of Twist:	2"	2"
Pair Shield:	100% coverage, .35 mil aluminum x .5 mil Mylar® tape and 22 gauge 7 strand tinned copper drain wire; shield tape to be applied in such a way as to give total shield isolation from all other pair shields	100% coverage, .35 mil aluminum x .5 mil Mylar® tape and 22 gauge 7 strand tinned copper drain wire; shield tape to be applied in such a way as to give total shield isolation from all other pair shields
Cable Shield:	100% coverage, 2.35 mil aluminum-Mylar tape shield and a 20 gauge 7 strand tinned copper drain wire	100% coverage, 2.35 mil aluminum-Mylar tape shield and a 20 gauge 7 strand tinned copper drain wire
Jacket:	Black 105°C FR PVC	Black 105°C FR PVC
Communications Wire:	22 gauge 7 strand cooper with 15 mils of orange PVC insulation	22 gauge 7 strand copper with 15 mils of orange PVC insulation

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE

Multiple Shielded Pairs or Triads and Overall Shield
300 Volt 105°C Power Limited Tray Cable

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 13	105°C	105°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 13	1500 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 13	100%	100%
Deformation (T_2/T_1 Max.)	UL Subject 13	50%	50%
Air Oven Aging (168 Hrs. @ 136°C)	UL Subject 13		
% Retained Tensile		70%	
% Retained Elongation		65%	
(168 Hrs. @ 121°C)			
% Retained Tensile			70%
% Retained Elongation			45% (die cut)
Cold Bend (@ −20°C) 72 Hours	UL Subject 13	No Cracks	No Cracks
Flammability	UL Subject 13		
Horizontal		Pass	
Vertical & 70,000 BTU			Pass
Conductor Corrosion (168 Hrs. @ 136°C)	UL Subject 13	None	
Heat Shock			
(168 Hrs. @ 136°C)		No Cracks	
(168 Hrs. @ 121°C)			No Cracks
Shrinkage Test (6 Hrs. @ 121°C ⅛" Max.)	UL Subject 13	⅛" Or Less	
ELECTRICAL SPECIFICATIONS			
Dielectric	UL Subject 13		900V AC
Spark Test	UL Subject 13	2000V AC	
Continuity		100%	100%
Insulation Resistance (Min.)	UL Subject 13	100 Megohms 1,000′	

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

Applications

Individually shielded pairs or triads, overall shield instrumentation cables are for use where optimum noise rejection is required such as computers, instrumentation, and control applications.

They are suitable for installation in wet or dry locations and conductor temperatures up to 105° centigrade. They may be installed in cable, tray, rigid metal conduit, intermediate metallic conduit, electrical metallic tubing (EMT), or other raceways as approved by the appropriate authority.

Construction

Conductors are bare soft annealed copper, Class B, 7 strand concentric in accordance with ASTM B-3 and B-8. Polyvinyl chloride insulation, flame-retardant in accordance with UL 13, 0.015″ nominal thickness, 105°C temperature rating. Tinned 7 strand copper drain wire, one size smaller than conductor. Aluminum-foil/mylar® pair or triad shield, 1.5 mil, wrapped to provide 100% coverage, foil facing inward. Pairs or triads are twisted. Conductors have a 1½″ to 2½″ staggered lay. Pairs are color coded black and white. Triads are color coded black, white, and red. The white conductor in each pair or triad is sequentially numbered for identification. Communication wire is a 22 AWG, Class B stranded, annealed uncoated copper covered with a 0.015″ orange 105°C polyvinyl chloride. Aluminum-foil/mylar cable shield, 2.35 mils, wrapped helically with a 10% minimum overlap to provide 100% coverage, foil facing outward. Tinned stranded copper drain wire 20 AWG. Rip cord is applied longitudinally under the jacket to facilitate stripping. Jacket is black, flame-retardant polyvinyl chloride in accordance with UL 13, 105°C temperature rating, UL listed as Power-Limited Tray Cable for use in accordance with NEC Article 725.

Cable passes the UL 70,000 BTU flame test which is comparable to the IEEE-383 flame test.

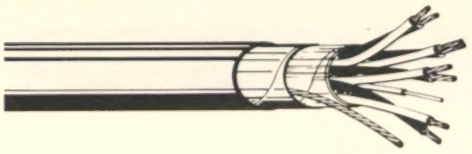
Product Features

Instrumentation cables are flame-retardant (will not propagate flame), oil resistant, sunlight resistant, have superior weathering characteristics, are easy to splice or terminate, twisted to reduce electromagnetics, and pairs of triads are color coded for easy hook-up.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE

Multiple Twisted Pairs With Overall Shield
Type TC 600 Volt



Catalog Number	Size AWG	No. of Pairs	Jacket Thickness Inches	Overall Diameter Inches
1063A	18	2	.050	.430
1064A	18	4	.050	.510
1065A	18	8	.066	.660
1066A	18	12	.066	.780
1067A	18	16	.066	.860
1068A	18	24	.089	1.100
1087A	18	36	.089	1.260
1088A	18	50	.089	1.480
1069A	16	2	.050	.465
1070A	16	4	.066	.590
1071A	16	8	.066	.720
1072A	16	12	.066	.850
1073A	16	16	.089	.990
1074A	16	24	.089	1.210
1089A	16	36	.089	1.380
1090A	16	50	.089	1.620

Ⓤ LISTED

Dimensions shown are subject to standard industry tolerances.

CONSTRUCTION SPECIFICATIONS		
Conductor:	16 gauge 7 strand concentric bare copper, Class B	18 gauge 7 strand concentric bare copper, Class B
Primary Insulation:	15 mils nominal, PVC, 4 mils nylon	15 mils nominal, PVC, 4 mils nylon
Number of conductors:	2	2
Color Code:	Black and white	Black and white
Group Identification:	Each pair numbered	Each pair numbered
Lay of Twist:	1½" to 2½" staggered	1½" to 2½" staggered
Cable Shield:	100% coverage, 2.35 mil aluminum-Mylar® tape shield and a 16 gauge 7 strand tinned copper drain wire	100% coverage, 2.35 mil aluminum-Mylar® tape shield and an 18 gauge 7 strand tinned copper drain wire
Jacket:	Black 90°C FR PVC	Black 90°C FR PVC

Values stated are *Minimum* requirements as outlined in the applicable standards and in all cases are met or exceeded.

BELDEN

INSTRUMENTATION CABLE

Multiple Twisted Pairs With Overall Shield
Type TC 600 Volt

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 1277 UL Subject 83 UL Subject 62	90°C Dry/75% Wet OR 90°C Dry Only	90°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 62&83 UL Subject 1277	2000 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F) Deformation (T_2/T_1 Max.)	UL Subject 62&83 UL Subject 1277 UL Subject 62&83	150% 25%	150% 50%
Air Oven Aging (168 Hrs. @ 136°C) % Retained Tensile % Retained Elongation (168 Hrs. @ 121°C) % Retained Tensile % Retained Elongation	UL Subject 62&83 UL Subject 1277 (die cut speciman)	 75% 65%	 70% 45%
Cold Bend (@ −25°C) 1 Hour 72 Hours	UL Subject 62&83 UL Subject 1277	No Cracks	No Cracks
Flammability Primaries-Vertical Cable-70,000 BTU	UL Subject 62&83 UL Subject 1277	Pass	Pass
Heat Shock (1 Hr @ 121°C)	UL Subject 83 UL Subject 1277	No Cracks	No Cracks
ELECTRICAL SPECIFICATIONS	UL Subject 62&83 UL Subject 1277		
Dielectric		6-7KVAC (Spark Test)	2000 Volts AC
Continuity		100%	100%
Insulation Resistance (60°F or Rated Temp.)	UL Subject 62&63	2.5 Megohms/1,000' (TFN/TFFN) 665 Megohms/1,000' (THHN/THWN)	

Values stated are *Minimum* requirements as outlined in the applicable standards and in all cases are met or exceeded.

Application

The cables shown are U.L. listed as NEC article 340, 600 volt control cables, and are approved for Tray Cable application in class 1, division 2 hazardous areas.

Construction

Multiple twisted pairs of stranded copper wire insulated with PVC nylon. Mylar tape. Tinned copper drain wire. Aluminum-Mylar® shield. Rip Cord. Extruded FRPVC jacket.

Features

Stranded conductors provide a very flexible cable. Individual pairs or triples are twisted to reduce magnetic noise and to provide a clean signal. External electrostatic noise is reduced by an overall aluminum-Mylar shield and drain wire. Each conductor in the pair is numbered every inch and color coded for identification and easy hook-up. Rip cord provided for easy jacket removal.

Cable passes the UL 70,000 BTU flame test which is comparable to the IEEE-383 flame test.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE

Control Cables Type TC 600 Volt
Multiple Individual Shielded Pairs With Overall Shield

Catalog Number	Size AWG	No. of Pairs	Jacket Thickness Inches	Overall Diameter Inches
1048A	18	2	.050	.400
1049A	18	4	.050	.520
1050A	18	8	.066	.710
1051A	18	12	.068	.850
1052A	18	16	.078	.960
1053A	18	24	.089	1.210
1054A	18	36	.089	1.400
1038A	18	50	.089	1.620
1055A	16	2	.050	.510
1037A	16	3	.050	.530
1039A	16	4	.066	.610
1040A	16	6	.066	.680
1041A	16	8	.066	.770
1042A	16	12	.089	.980
1043A	16	16	.089	1.09
1044A	16	20	.089	1.200
1045A	16	24	.089	1.330
1046A	16	36	.089	1.520
1047A	16	50	.089	1.790

Ⓤ LISTED

Dimensions shown are subject to standard industry tolerances.
Packaging: Shipped on non-returnable wooden reels.

CONSTRUCTION SPECIFICATIONS		
Conductor:	16 gauge 7 strand concentric bare copper, Class B	18 gauge 7 strand concentric bare copper, Class B
Primary Insulation:	15 mils nominal, PVC, 4 mils nylon	15 mils nominal, PVC, 4 mils nylon
Number of conductors:	2	2
Color Code:	Black and white	Black and white
Group Identification:	Each pair numbered	Each pair numbered
Lay of Twist:	2"	2"
Pair Shield:	100% coverage, .35 mil aluminum × .5 mil Mylar® tape and 18 gauge 7 strand tinned copper drain wire; shield tape to be applied in such a way as to give total shield isolation from all other pair sheilds	100% coverage, .35 mil aluminum × .5 mil Mylar tape and 20 gauge 7 strand tinned copper drain wire; shield tape to be applied in such a way as to give total shield isolation from all other pair shields.
Cable Shield:	100% coverage, 2.35 mil aluminum-Mylar® tape shield and a 16 gauge 7 strand tinned copper drain wire	100% coverage, 2.35 mil aluminum-Mylar tape shield and an 18 gauge 7 strand tinned copper drain wire
Jacket:	Black 90°C FR PVC	Black 90°C FR PVC

Values stated are *Minimum* requirements as outlined in the applicable standards and in all cases are met or exceeded.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE

Control Cables Type TC 600 Volt
Multiple Individual Shielded Pairs With Overall Shield

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 1277 UL Subject 83 UL Subject 62	90°C Dry/75% Wet OR 90°C Dry Only	90°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 62&83 UL Subject 1277	2000 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 62&83 UL Subject 1277	150%	150%
Deformation (T_2/T_1 Max.)	UL Subject 62&83	25%	50%
Air Oven Aging (168 Hrs. @ 136°C) % Retained Tensile % Retained Elongation (168 Hrs. @ 121°C) % Retained Tensile % Retained Elongation	UL Subject 62&83 UL Subject 1277 (die cut speciman)	 75% 65%	 70% 45%
Cold Bend (@ −25°C) 1 Hour 72 Hours	UL Subject 62&83 UL Subject 1277	No Cracks	No Cracks
Flammability Primaries-Vertical Cable- 70,000 BTU	UL Subject 62&83 UL Subject 1277	Pass	Pass
Heat Shock (1 Hr @ 121°C)	UL Subject 83 UL Subject 1277	No Cracks	No Cracks
ELECTRICAL SPECIFICATIONS	UL Subject 62&83 UL Subject 1277		
Dielectric		6-7KVAC (Spark Test)	2000 Volts AC
Continuity		100%	100%
Insulation Resistance (60°F or Rated Temp.)	UL Subject 62&83	2.5 Megohms/1,000' (TFN/TFFN) 665 Megohms/1,000' (THHN/THWN)	

Values stated are *Minimum* requirements as outlined in the applicable standards and in all cases are met or exceeded.

Application

The cables shown are U.L. listed as NEC article 340, 600 volt control cables, and are approved for Tray Cable application in class 1, division 2 hazardous areas.

Construction

Multiple twisted pairs of stranded copper wire insulated with PVC nylon. Aluminum-Mylar® shield over individual pairs. Individual shield tinned copper drain wire. Mylar tape. Overall shield tinned copper drain. Aluminum–Mylar shield over cable. Rip Cord. Extruded FRPVC jacket.

Features

Stranded conductors provide a very flexible cable. Individual pairs are twisted to reduce magnetic noise and to provide a clean signal. Each pair is twisted and shielded for maximum rejection to electrostatic and magnetic noise. External electrostatic noise is reduced by an overall aluminum–Mylar shield and drain wire. Each conductor in the pair is numbered every inch and color-coded for identification and easy hook-up. Rip cord provided for easy jacket removal.

Cable passes the UL 70,000 BTU flame test which is comparable to the IEEE-383 flame test.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE
Multiple Shielded Triads and Overall Shield
600 Volt 105°C Tray Cable

LISTED

Catalog Number	Size AWG	No. of Triads	Jacket Thickn. Inches	Overall Diameter Inches
1093A	18	4	.066	.600
1094A	18	8	.066	.770
1095A	18	12	.089	.980
1096A	18	24	.089	1.330
1097A	16	4	.066	.650
1098A	16	8	.089	.890
1099A	16	12	.089	1.070
1100A	16	24	.089	1.460

Dimensions shown are subject to standard industry tolerances.

CONSTRUCTION SPECIFICATIONS		
Conductor:	16 gauge 7 strand concentric bare copper, class B	18 gauge 7 strand concentric bare copper, Class B
Primary Insulation:	15 mils nominal, PVC, 4 mils nylon	15 mils nominal, PVC, 4 mils nylon
Number of conductors:	3	3
Color Code:	Black, white and red	Black, white and red
Group Identification:	Each triad numbered	Each triad numbered
Lay of Twist:	2"	2"
Triad Shield:	100% coverage, .35 mil aluminum × .5 mil Mylar® tape and 18 gauge 7 strand tinned copper drain wire; shield tape to be applied in such a way as to give total shield isolation from all other pair shields	100% coverage, .35 mil aluminum × .5 mil Mylar tape and 20 gauge 7 strand tinned copper drain wire; shield tape to be applied in such a way as to give total shield isolation from all other pair shields
Cable Shield:	100% coverage, 2.35 mil aluminum-Mylar® tape shield and a 16 gauge 7 strand tinned copper drain wire	100% coverage, 2.35 mil aluminum-Mylar tape shield and an 18 gauge 7 strand tinned copper drain wire
Jacket:	Black 90°C FR PVC	Black 90°C FR PVC

Values stated are *Minimum* requirements as outlined in the applicable standards and in all cases are met or exceeded.

COOPER INDUSTRIES BELDEN

INSTRUMENTATION CABLE

Multiple Shielded Triads and Overall Shield
600 Volt 105°C Tray Cable

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 1277 UL Subject 83 UL Subject 62	90°C Dry/75% Wet OR 90°C Dry Only	90°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 62&83 UL Subject 1277	2000 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 62&83 UL Subject 1277	150%	150%
Deformation (T_2/T_1 Max.)	UL Subject 62&83	25%	50%
Air Oven Aging (168 Hrs. @ 136°C) % Retained Tensile % Retained Elongation	UL Subject 62&83	75% 65%	
(168 Hrs. @ 121°C) % Retained Tensile % Retained Elongation	UL Subject 1277 (die cut speciman)		70% 45%
Cold Bend (@ −25°C) 1 Hour 72 Hours	UL Subject 62&83 UL Subject 1277	No Cracks	No Cracks
Flammability Primaries-Vertical Cable- 70,000 BTU	UL Subject 62&83 UL Subject 1277	Pass	Pass
Heat Shock (1 Hr @ 121°C)	UL Subject 83 UL Subject 1277	No Cracks	No Cracks
ELECTRICAL SPECIFICATIONS	UL Subject 62&83 UL Subject 1277		
Dielectric		6-7KVAC (Spark Test)	2000 Volts AC
Continuity		100%	100%
Insulation Resistance (60°F or Rated Temp.)	UL Subject 62&83	2.5 Megohms/1,000' (TFN/TFFN) 665 Megohms/1,000' (THHN/THWN)	

Values stated are *Minimum* requirements as outlined in the applicable standards and in all cases are met or exceeded.

Application

The cables shown are U.L. listed as NEC article 340, 600 volt control cables, and are approved for Tray Cable application in class 1, division 2 hazardous areas.

Construction

Multiple twisted triads of stranded copper wire insulated with PVC nylon. Aluminum–Mylar® shield over individual triads. Individual shield tinned copper drain wire. Mylar tape. Overall shield tinned copper drain. Aluminum–Mylar shield over cable. Rip Cord. Extruded FRPVC jacket.

Features

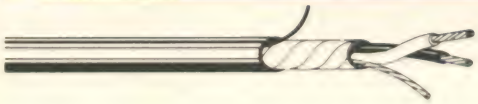
Stranded conductors provide a very flexible cable. Individual triples are twisted to reduce magnetic noise and to provide a clean signal. Each triple is twisted and shielded for maximum rejection to electrostatic and magnetic noise. External electrostatic noise is reduced by an overall aluminum–Mylar shield and drain wire. Each conductor in the triple is numbered every inch and color-coded for identification and easy hook-up. Rip cord provided for easy jacket removal.

Cable passes the UL 70,000 BTU flame test which is comparable to the IEEE-383 flame test.

BELDEN

THERMOCOUPLE EXTENSION WIRE

16 AWG Single Pair Shielded
FEP Teflon 200°C Rating



UL LISTED

Catalog Number	ANSI TYPE	Size AWG	No. of Cond.	Overall Diameter Inches
1114A	EX	16	2	.250
1115A	JX	16	2	.250
1116A	KX	16	2	.250
1117A	TX	16	2	.250

Dimensions shown are subject to standard industry tolerances.

Type Designations

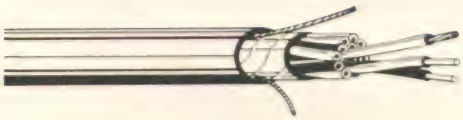
ASA TYPE	Alloys		Insulation Colors		Jacket Color
	Positive	Negative	Positive	Negative	
EX	Chromel	Constantan	Purple	Red	Purple
JX	Iron	Constantan	White	Red	Black
KX	Chromel	Alumel	Yellow	Red	Yellow
TX	Copper	Constantan	Blue	Red	Blue

CONSTRUCTION SPECIFICATIONS	TYPE
Conductor:	16 gauge solid alloy wire matched and calibrated to ANSI specification RP1.1-3 and ANSI C96.1-1969 for thermocouple extension wire
Primary Insulation:	10 mils nominal FEP Teflon
Color Code:	ANSI color code
Lay of Twist:	2"
Shield:	Beldfoil®
Jacket:	15 mils nominal, FEP Teflon

BELDEN

THERMOCOUPLE EXTENSION CABLE

Single and Multiple Pairs—Overall Shield
300 Volts 105°C Rating



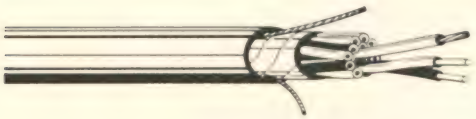
Catalog Number	ANSI Type	Size AWG	No. Pairs	Jacket Mils	Overall Diameter
1108A	EX	20	4	40	0.360
1109A	EX	20	8	50	0.460
1110A	EX	20	12	50	0.540
1111A	EX	20	24	60	.780
1101A	EX	16	1	35	0.250
1102A	JX	20	4	40	0.360
1001A	JX	20	8	50	0.470
1002A	JX	20	12	50	0.540
1003A	JX	20	16	60	0.620
1004A	JX	20	24	60	0.730
1005A	JX	20	36	70	0.840
1000A	JX	16	1	35	0.250
1103A	KX	20	8	50	0.470
1019A	KX	20	12	50	0.540
1020A	KX	20	16	60	0.620
1021A	KX	20	24	60	0.730
1022A	KX	20	36	70	0.840
1018A	KX	16	1	35	0.250

Ⓤ LISTED

BELDEN

THERMOCOUPLE EXTENSION CABLE

Single and Multiple Pairs—Overall Shield
300 Volts 105°C Rating



UL LISTED

Catalog Number	ANSI Type	Size AWG	No Pairs	Jacket Mils	Overall Diameter
1104A	TX	20	4	40	0.360
1105A	TX	20	8	50	0.470
1106A	TX	20	12	50	0.540
1107A	TX	20	24	60	0.730
1023A	TX	16	1	35	0.250

Dimensions shown are subject to standard industry tolerances.

NOTE: 16 AWG multiple pair cable construction is available on request.

Type Designations

ANSI Type	Alloys		Insulation Colors		Jacket Color	Temperature Range C	Limits of Error
	Positive	Negative	Positive	Negative			
EX	Chromel	Constantan	Purple	Red	Purple	0 to +200	± 1.7°C
JX	Iron	Constantan	White	Red	Black	0 to +200	± 2.2°C
KX	Chromel	Alumel	Yellow	Red	Yellow	0 to +200	± 2.2°C
TX	Copper	Constantan	Blue	Red	Blue	60 to +100	± 1.0°C

Note: The red (negative) in each pair is sequentially numbered for identification.

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 13	105°C	105°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 13	1500 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 13	100%	100%
Deformation (T_2 / T_1 Max.)	UL Subject 13	50%	50%
Air Oven Aging (168 Hrs. @ 136°C)	UL Subject 13		
% Retained Tensile		70%	
% Retained Elongation		65%	
(168 Hrs. @ 121°C)			
% Retained Tensile			70%
% Retained Elongation			45% (die cut)
Cold Bend (@ −20°C) 72 Hours	UL Subject 13	No Cracks	No Cracks
Flammability	UL Subject 13		
Horizontal		Pass	
Vertical & 70,000 BTU			Pass
Conductor Corrosion (168 Hrs. @ 136°C)	UL Subject 13	None	

COOPER INDUSTRIES BELDEN

THERMOCOUPLE EXTENSION CABLE

Single and Multiple Pairs—Overall Shield
300 Volts 105°C Rating

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Heat Shock (168 Hrs. @ 136°C) (168 Hrs. @ 121°C)	UL Subject 13	No Cracks	No Cracks
Shrinkage Test (6 Hrs. @ 121°C ⅛" Max.)		⅛" Or Less	
ELECTRICAL SPECIFICATIONS			
Dielectric	UL Subject 13		900V AC
Spark Test	UL Subject 13	2000V AC	
Continuity		100%	100%
Insulation Resistance (Min.)	UL Subject 13	100 Megohms 1,000'	

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

Applications

Overall shielded thermocouple extension cables are for use on circuits where shielding from ambient interference is required but shielding between pairs is not essential. They are suitable for installation in wet or dry locations and conductor temperatures up to 105° centigrade. They may be installed in cable tray, rigid metal conduit, intermediate metallic conduit, electrical metallic conduit (EMT), or other raceways as approved by the appropriate authority.

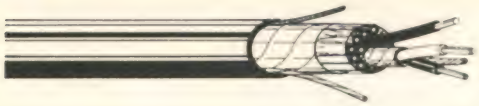
Construction

Solid thermocouple alloy conductors, matched and calibrated to standard limits of error per Table VIII of ANSI MC96.1—1975. Primary insulation is 0.015" of 105°C polyvinyl chloride color coded in accordance with Table I and conforming to UL 13. Insulated conductors are twisted to a 1½" to 2½" staggered lay. Communication wire is a 22 AWG, Class B stranded annealed uncoated copper covered with a 0.015" orange polyvinyl chloride insulation, not included in single pair cables. Aluminum-foil/mylar® cable shield, 1.5 mils on single pair, 2.35 mils on multiple pairs, wrapped helically with a 10% minimum overlap to provide 100% coverage, foil facing outward. Tinned stranded copper drain wire: (a) 18 AWG for 16 AWG conductors. (b) 20 AWG for 20 AWG conductors. Rip cord is applied longitudinally under the jacket to facilitate stripping. Jacket is flame-retardant polyvinyl chloride in accordance with UL 13, 105°C temperature rating. UL listed as type PLCC (Power Limited Circuit Cable) for use in accordance with NEC Article 725.

BELDEN

THERMOCOUPLE EXTENSION CABLE

Multiple Shielded Pairs—Overall Shield
300 Volts 105°C Rating



Catalog Number	ANSI Type	Size AWG	No. Pairs	Jacket Mils	Overall Diameter Inches
1112A	EX	20	4	50	0.390
1027A	EX	20	8	50	0.510
1028A	EX	20	12	60	0.620
1029A	EX	20	24	60	0.850
1006A	JX	20	4	50	0.385
1007A	JX	20	8	50	0.515
1008A	JX	20	12	60	0.620
1009A	JX	20	16	60	0.700
1010A	JX	20	24	60	0.820
1011A	JX	30	36	70	0.990
1012A	KX	20	4	50	0.385
1013A	KX	20	8	50	0.515
1014A	KX	20	12	60	0.620
1015A	KX	20	16	60	0.700
1016A	KX	20	24	60	0.820
1017A	KX	20	36	70	0.990
1113A	TX	20	4	50	0.385
1024A	TX	20	8	50	0.515
1025A	TX	20	12	60	0.620
1026A	TX	20	24	60	0.820

Ⓤ LISTED

Dimensions shown are subject to standard industry tolerances.

NOTE: 16 AWG multiple pair cable construction is available on request.

COOPER INDUSTRIES BELDEN

THERMOCOUPLE EXTENSION CABLE

Multiple Shielded Pairs—Overall Shield
300 Volts 105°C Rating

Type Designations							
ANSI Type	Alloys		Insulation Colors		Jacket Color	Temperature Range C	Limits of Error
	Positive	Negative	Positive	Negative			
EX	Chromel	Constantan	Purple	Red	Purple	0 to +200	± 1.7°C
JX	Iron	Constantan	White	Red	Black	0 to +200	± 2.2°C
KX	Chromel	Alumel	Yellow	Red	Yellow	0 to +200	± 2.2°C
TX	Copper	Constantan	Blue	Red	Blue	60 to +100	± 1.0°C

Note: The red (negative) in each pair is sequentially numbered for identification.

PHYSICAL CHARACTERISTICS	TEST METHOD	PRIMARY INSULATION	JACKET
Temperature Rating	UL Subject 13	105°C	105°C
Tensile Strength (Min. PSI @ 75°F)	UL Subject 13	1500 PSI	1500 PSI
Ultimate Elongation (Min. % @ 75°F)	UL Subject 13	100%	100%
Deformation (T_2/T_1 Max.)	UL Subject 13	50%	50%
Air Oven Aging (168 Hrs. @ 136°C)	UL Subject 13		
% Retained Tensile		70%	
% Retained Elongation		65%	
(168 Hrs. @ 121°C)			
% Retained Tensile			70%
% Retained Elongation			45% (die cut)
Cold Bend (@ −20°C) 72 Hours	UL Subject 13	No Cracks	No Cracks
Flammability	UL Subject 13		
Horizontal		Pass	
Vertical & 70,000 BTU			Pass
Conductor Corrosion (168 Hrs. @ 136°C)	UL Subject 13	None	
Heat Shock (168 Hrs. @ 136°C) (168 Hrs. @ 121°C)		No Cracks	No Cracks
Shrinkage Test (6 Hrs. @ 121°C ⅛" Max.)	UL Subject 13	⅛" Or Less	
ELECTRICAL SPECIFICATIONS			
Dielectric	UL Subject 13		900V AC
Spark Test	UL Subject 13	2000V AC	
Continuity		100%	100%
Insulation Resistance (Min.)	UL Subject 13	100 Megohms 1,000'	

Values stated are *Minimum* requirements as outlined in the applicable Standard and in all cases are met or exceeded.

Applications

Individually shielded pairs—overall shielded thermocouple extension cables are for use on circuits where total isolation is necessary between pairs and from ambient external interference. They are suitable for installation in wet or dry locations and conductor temperatures up to 105° centigrade. They may be installed in cable tray, rigid metal conduit, intermediate metallic conduit, electrical metallic conduit (EMT), or other raceways as approved by the appropriate authority.

Construction

20 AWG solid thermocouple alloy conductors, matched and calibrated to standard limits of error per Table VIII of ANSI MC96.1—1975. Primary insulation is 0.015" of 105°C polyvinyl chloride, color coded in accordance with Table I and conforming to UL 13. Drain wire is 22 AWG Class B annealed stranded copper. Insulated pairs are twisted with drain wire to a 1½" to 2½" staggered lay. Aluminum-foil/mylar® pair shield, 1.5 mils, helically wrapped with a 10% overlap to provide 100% coverage. Communication wire is a 22 AWG, Class B stranded, annealed uncoated copper covered with a 0.015" orange 105°C polyvinyl chloride. Aluminum-foil/mylar cable shield, 2.35 mils, wrapped helically with a 10% overlap to provide 100% coverage, foil facing outward. Drain wire is 20 AWG, Class B stranded, tin coated copper. Rip cord is applied longitudinally under the jacket to facilitate stripping. Jacket is flame-retardant polyvinyl chloride in accordance with UL 13, 105°C temperature rating, UL listed as type PLCC (Power Limited Circuit Cable) for use in accordance with NEC Article 725.

COOPER INDUSTRIES BELDEN

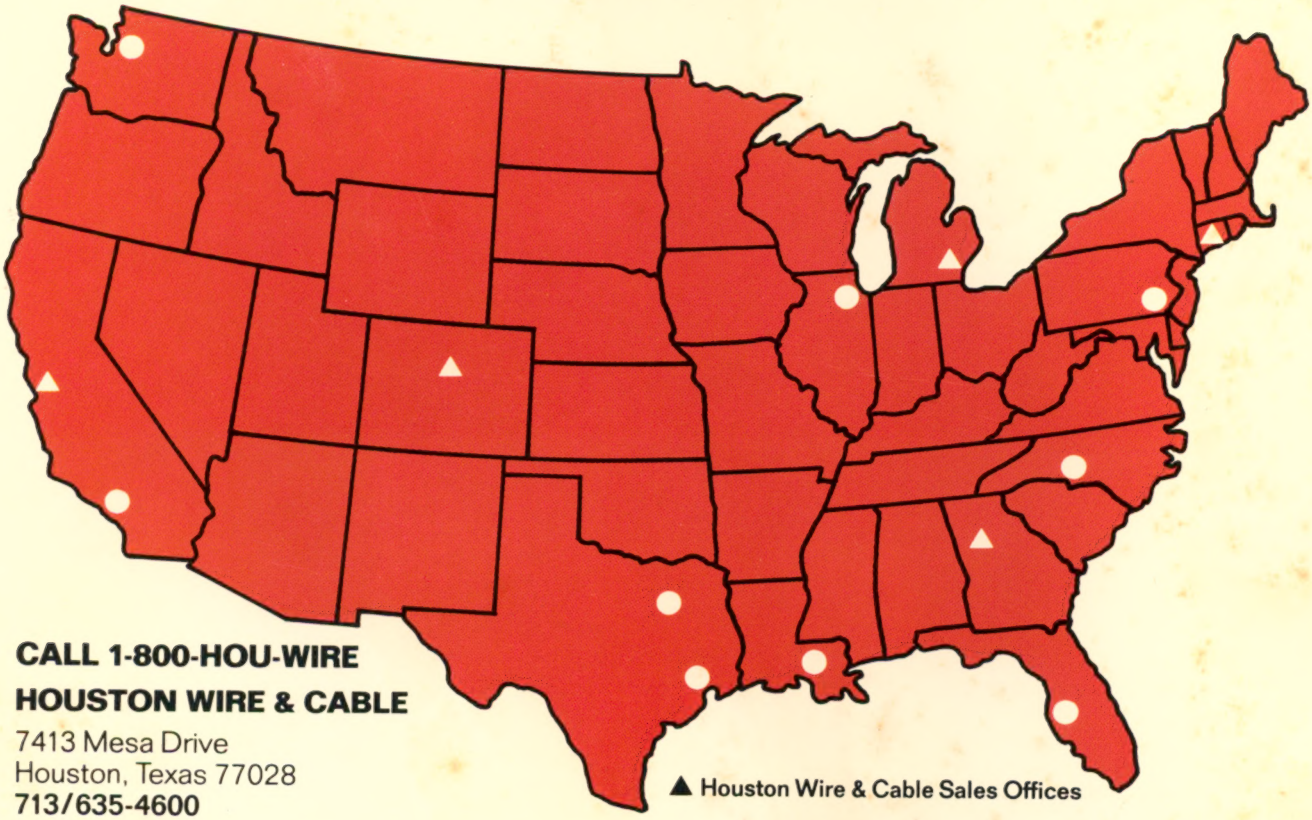
Dekoron®–Belden
Cross Reference Guide

Dekoron	Belden
1802-6160R	1101A
1802-6260R	1000A
1802-6360R	1018A
1802-6560R	1023A
1820-00410	1108A
1820-00810	1109A
1820-01210	1110A
1820-02410	1111A
1820-00420	1102A
1820-00820	1001A
1820-01220	1002A
1820-01620	1003A
1820-02420	1004A
1820-03620	1005A
1820-00830	1103A
1820-01230	1019A
1820-01630	1020A
1820-02430	1021A
1820-03630	1022A
1820-00450	1104A
1820-00850	1105A
1820-01250	1106A
1820-02450	1107A
1824-00410	1112A
1824-00810	1027A
1824-01210	1028A
1824-02410	1029A
1824-00420	1006A
1824-00820	1007A
1824-01220	1008A
1824-01620	1009A
1824-02420	1010A
1824-03620	1011A
1824-00430	1012A
1824-00830	1013A
1824-01230	1014A
1824-01630	1015A
1824-02430	1016A
1824-03630	1017A

Dekoron	Belden
1824-00450	1113A
1824-00850	1024A
1824-01250	1025A
1824-02450	1026A
1850-6860R	1035A
1860-6860R	1034A
1852-6860R	1030A
1852-8860R	1032A
1862-6860R	1031A
1862-8860R	1036A
1870-00480	1056A
1870-00880	1057A
1870-01280	1058A
1870-01680	1059A
1870-02480	1060A
1870-03680	1061A
1870-05080	1062A
1874-00280	1075A
1874-00480	1076A
1874-00880	1077A
1874-01280	1078A
1874-01680	1079A
1874-02080	1091A
1874-02480	1080A
1874-03680	1081A
1874-05080	1082A
1884-00480	1083A
1884-00880	1084A
1884-01280	1085A
1884-01680	1092A
1884-02480	1086A
1C70-80200	1063A
1C70-80400	1064A
1C70-80800	1065A
1C70-81200	1066A
1C70-82400	1068A
1C70-83600	1087A
1C70-85000	1088A
1C74-80200	1048A

Dekoron	Belden
1C74-80400	1049A
1C74-80800	1050A
1C74-81200	1051A
1C74-81600	1052A
1C74-82400	1053A
1C74-83600	1054A
1C74-85000	1038A
1C70-60200	1069A
1C70-60400	1063A
1C70-60800	1071A
1C70-61200	1072A
1C70-61600	1073A
1C70-62400	1074A
1C70-63600	1089A
1C70-65000	1090A
1C74-60200	1055A
1C74-60300	1037A
1C74-60400	1039A
1C74-60600	1040A
1C74-60800	1041A
1C74-61200	1042A
1C74-61600	1043A
1C74-62000	1044A
1C74-62400	1045A
1C74-63600	1046A
1C74-65000	1047A
1C84-80400	1093A
1C84-80800	1094A
1C84-81200	1095A
1C84-82400	1096A
1C84-60400	1097A
1C84-60800	1098A
1C84-61200	1099A
1C84-62400	1100A
1F02-63110	1116A
1F02-61110	1114A
1F02-62110	1115A
1F02-65110	1117A

Belden and Houston Wire & Cable. A Tough Combination to beat!



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HOUSTON WIRE & CABLE

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A Winning Commitment